

# NEBRASKA HEALTH AND HUMAN SERVICES SYSTEM



DEPARTMENT OF SERVICES • DEPARTMENT OF REGULATION AND LICENSURE • DEPARTMENT OF FINANCE AND SUPPORT

## FACT SHEET

### Cyanobacteria (blue-green algae) Harmful Algal Blooms Interim document, 6-4-04

#### **What cyanobacteria are**

- Cyanobacteria (blue-green algae) are a form of bacteria that grow in water and are photosynthetic. They are usually too small to see, but can sometimes form visible colonies. They can be found in terrestrial, fresh, brackish, or marine water environments. Cyanobacteria have been found among the oldest fossils on earth and are one of the largest groups of bacteria.

#### **What a harmful algal bloom (HAB) is**

- A harmful algal bloom occurs when the algae experience exuberant growth
- HABs are often associated with warm, slow-moving waters and waters that may have high levels of nutrients, such as fertilizer run-off or septic tank overflows.
- HABs most often occur in late summer or early fall
- HABs occur in marine, estuarine, and fresh waters.

#### **What a HAB looks like**

- HABs can be seen as colored masses of water in the oceans. They can also be seen as colored water, foam, scum, or mats on the surface of fresh water lakes and ponds.
- As a bloom grows and the algae begin to die, the water may smell bad
- Some HABs may not affect the appearance of the water at all
- You cannot tell if a HAB is making toxins by what it looks like

#### **The dangers of HABs**

HABs pose a potential danger to the environment, animals, and people.

- Dense HABs can block sunlight and use up all the oxygen in the water, killing other plants and animals.
- Blue-green algae toxins are among the most powerful natural poisons known
- HABs can make people, their pets, and other animals sick

#### **Other effects of freshwater HABs**

- They can make drinking water smell and taste bad

- They can make recreational areas unpleasant

### Species of blue-green algae that form HABs in fresh water

- *Microcystis aeruginosa*
- *Anabena circinalis*
- *Anabena flos-aquae*
- *Aphanizomenon flos-aquae*
- *Cylindrospermopsis raciborskii*

### Cyanotoxins: toxins made by blue-green algae

- The cyanotoxins belong to diverse groups of chemical substances with specific toxic mechanisms
- Neurotoxins
  - Anatoxin-a
  - Anatoxin-a(s)
  - Saxitoxin
  - Neosaxitoxin
- Hepatotoxins
  - Microcystins
  - Nodularins
  - Cylindrospermopsin
- Tumor promotor
  - Microcystins
- Lipopolysaccharides
  - gastroenteritis

### How you could be exposed to HABs and HAB-related toxins?

- Drinking water that comes from a lake or reservoir
- Drinking untreated water
- Doing recreational activities in waters with HABs
- Inhaling aerosols from water-related activities such as jet-skiing or boating
- Inhaling aerosols when watering lawns, irrigating golf-courses, etc. with pond water
- Using blue-green algae based dietary supplements (if they are contaminated with microcystins)
- Having dialysis (this has only been documented in Brazil)

### Types of illnesses can people and animals get from exposure to HABs

- **Skin contact** may give people a rash, hives, or skin blisters (especially on the lips and under swimsuits)
- **Inhaling water droplets** from irrigation or water-related recreational activities can cause runny eyes and nose, a sore throat, asthma-like symptoms, or allergic reactions
- **Swallowing water** that has blue-green toxins in it can cause
  - Acute, severe gastroenteritis (including diarrhea, vomiting)
  - Liver toxicity (i.e., increased serum levels of liver enzymes)
  - Kidney toxicity
  - Salivation and other neurologic symptoms (these are the symptoms most often seen in dogs)

who have been exposed to anatoxin)

### **How to protect yourself, your family, and your pets from being exposed to HABs**

- Don't swim, water ski, or boat in areas where the water is discolored or if there is foam, scum, or mats of algae on the water
- If you do swim in water that might have a HAB, rinse off with fresh water as soon as possible.
- Don't let pets or livestock swim in or drink from areas where the water is discolored or if there is foam, scum, or mats of algae on the water
- If pets (especially dogs) do swim in scummy water, rinse them off immediately—do not let them lick the algae (and toxins) off their fur
- Don't irrigate lawns or golf courses with pond water that looks scummy or smells bad
- Report any “musty” smell or taste in your drinking water to your local water utility
- Respect any water-body closures announced by local public health authorities

### **How to treat people or animals who have been exposed to blue-green algae toxins**

- Patient should be removed from exposure and given supportive treatment
- There are no antidotes for these toxins

### **How to get more information about blue-green algae**

#### **Federal**

- **Centers for Disease Control and Prevention (CDC)**
  - Harmful Algal Blooms (HABs) site  
<http://www.cdc.gov/habs> (tentative address)  
This site defines HABs, describes CDC's HABs-related activities, and provides links to data, publications, and other HABs resources.
  - Cyanobacteria site  
<http://www.cdc.gov/cyanobacteria> (tentative address)  
This site defines cyanobacteria, describes CDC's cyanobacteria-related activities, and provides links to data, publications, and other cyanobacteria resources.
- **Environmental Protection Agency (EPA)**
  - Drinking Water Contaminant Candidate List site  
<http://www.epa.gov/safewater/ccl/cclfs.html>  
This site provides information about EPA's list of contaminants that are not regulated, occur in public water systems, and may require regulation under the Safe Drinking Water Act. Algae that can be harmful are on this list.

#### **International**

- **State of Queensland Australia**  
HAB site  
[http://www.nrm.qld.gov.au/water/blue\\_green/index.html](http://www.nrm.qld.gov.au/water/blue_green/index.html)  
This site describes the state's plans and procedures for multi-agency response to HABs.

## States

- **North Carolina Department of Health and Human Services**  
Occupational and Environmental Epidemiology program, HABs Site  
<http://www.epi.state.nc.us/epi/hab/>

This site gives an overview of North Carolina's HAB program, and provides links to the state's HAB-related surveillance, research, and education activities.